

# Claims

[c1] What is claimed is:

1.A method for determining an ending of a frame in serial data, the frame having in sequence a header, a data stream, and a cyclic redundancy check (CRC) corresponding to the data stream with the last bit of the frame being the last bit of the CRC, the method comprising:

- (a)detecting the header of the frame;
- (b)determining an initial bit of the data stream according to the header of the frame;
- (c)utilizing a generator polynomial corresponding to the CRC of the data stream to perform CRC calculation on a plurality of bits beginning with the initial bit of the data streamfor generating a remainder; and
- (d)comparing the remainder with a fixed value, wherein the last bit of the bits is determined to be the ending of the frame when the remainder is equal to the fixed value.

[c2] 2.The method of claim 1 wherein the CRC is a complement of the remainder obtained from the CRC calculation performed on the data stream by the generator polynomial.

- [c3] 3.The method of claim 2 wherein the generator polynomial is  $x^{32} + x^{26} + x^{23} + x^{22} + x^{16} + x^{12} + x^{11} + x^{10} + x^8 + x^7 + x^5 + x^4 + x^2 + x + 1$ .
- [c4] 4.The method of claim 3 wherein the fixed value is 0xC704DD7B.
- [c5] 5.The method of claim 1 wherein when the remainder is equal to the fixed value, the bits comprises the data stream and the CRC.
- [c6] 6.The method of claim 1 wherein the header comprises a preamble being 0x555A.
- [c7] 7.The method of claim 1 further comprising:  
stopping performing Step(c) when the remainder does not equal to the fixed value and the length of the plurality of bits exceeds a predetermined value.
- [c8] 8.A receiver for receiving a frame, the frame having in sequence a header, a data stream, and a cyclic redundancy check (CRC) corresponding to the data stream with the last bit of the frame being the last bit of the CRC, the receiver comprising:  
a searching circuit for detecting the header of the frame;  
a CRC generating circuit electrically connected to the searching circuit for determining an initial bit of the data

stream according to the header of the frame, and performing CRC calculation to the initial bit of the data stream through a generator polynomial corresponding to the CRC of the data stream to generate a remainder; a comparing circuit electrically connected to the CRC generating circuit for comparing the remainder with a fixed value; and a determining logic circuit electrically connected to the comparing circuit for determining whether the last bit of the bits is the ending of the frame according to the output of the comparing circuit.

- [c9] 9.The receiver of claim 8 wherein the CRC is a complement of the remainder obtained from the CRC calculation performed on the data stream by the generator polynomial.
- [c10] 10.The receiver of claim 9 wherein the generator polynomial utilized by the CRC generating circuit is  $x^{32} + x^{26} + x^{23} + x^{22} + x^{16} + x^{12} + x^{11} + x^{10} + x^8 + x^7 + x^5 + x^4 + x^2 + x + 1$ .
- [c11] 11.The receiver of claim 10 wherein the fixed value utilized by the comparing circuit is 0xC704DD7B.
- [c12] 12.The receiver of claim 8 wherein the remainder resulting from the CRC calculation performed by the CRC gen-

erating circuit on the data stream and the CRC is equal to the fixed value.

- [c13] 13.The receiver of claim 8 wherein the header comprises a preamble being 0x555A.
- [c14] 14.The receiver of claim 8 wherein when the remainder does not equal to the fixed value, and the length of the plurality of bits exceeds a predetermined value, the CRC generating circuit stops the CRC calculation.
- [c15] 15.The receiver of claim 8 applied in peer-to-peer transmission.